

STUDY OF OXYTOCIN EXPRESSION THROUGH TRANSGENIC MICE. W. S. Young, III, Laboratory of Cell Biology, National Institute of Mental Health, NIH, Bethesda, MD 20872

Oxytocin (OT) and vasopressin (VP) are nonapeptides expressed in the magnocellular neurons of the paraventricular (PVN) and supraoptic (SON) nuclei of the hypothalamus. They are processed from preprohormone precursors as they are transported to the posterior pituitary for release. OT is best known for its roles in lactation and parturition and VP for regulation of salt and water balance. OT and VP are also synthesized in parvocellular neurons that project throughout the CNS for regulation of numerous functions, including maternal, reproductive, and agonistic behaviors, learning and memory, blood pressure control and ACTH release. Despite our extensive knowledge of the roles of OT and VP, relatively little is known about how their genes are regulated. To establish a model that could be used to examine the functional elements of the OT and VP genes, we made a mini-locus with 1.63 and 3.55kbp of rat OT and VP sequences, respectively (with 0.36 and 1.4kbp of OT and VP promoter sequences, respectively). We constructed the mini-locus because the two genes are neighbors on the same chromosome and each gene might rely on elements within the other's for proper regulation. Our construct permitted cell-specific expression of OT, but not VP, that was stimulated by lactation (*J. Neuroendocrinol.* 2:917, 1990). Rat OT-neurophysin was detected in the PVN and SON and in the posterior pituitary. We will report our progress in analyzing various constructs derived from our original one, as well as in the inactivation of the mouse OT gene by gene targeting.